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Interpreting Streamflow Forecasts

Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

Most Probable (50 Percent Chance of Exceeding) Forecast. This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

70 Percent Chance of Exceeding Forecast. There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

90 Percent Chance of Exceeding Forecast. There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

30 Percent Chance of Exceeding Forecast. There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

10 Percent Chance of Exceeding Forecast. There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

Using the forecasts—an example

Using the Most Probable Forecast. Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

Using the Higher Exceedance Forecasts. If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

Using the Lower Exceedance Forecasts. If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

UPPER HUMBOLDT RIVER BASIN								
STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	<-----DRIER----- FUTURE CONDITIONS -----WETTER----->						
		----- Chance of Exceeding -----						
		90%	70%	50% (Most Probable)	30%	10%	25 YR.	
		(1000AF)	(1000AF)	(1000AF) (% AVG.)	(1000AF)	(1000AF)	(1000AF)	
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0	36	77	52	76	47
	APR-JUL	8.0	17.0	31	74	45	67	42
LAMOILLE CREEK nr Lamoille	MAR-JUL	6.0	16.0	24	79	32	43	31
	APR-JUL	4.0	15.0	22	75	30	41	30
NF HUMBOLDT RIVER at Devils Gate	MAR-JUL	6.0	12.0	43	73	74	121	59

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Steamflow Forecasts".

GENERAL OUTLOOK

- IDAHO -

SUMMARY

MARCH 1, 1991

ANOTHER MONTH OF WELL BELOW NORMAL SNOWFALL HAS VIRTUALLY SEALED THE FATE OF SOUTHERN AND CENTRAL IDAHO'S WATER SUPPLY FOR THE 1991 SEASON. MANY BASINS REPORT THE SECOND LOWEST SNOWPACK ON RECORD FOR MARCH 1, AND STREAMFLOW FORECASTS REFLECT THE EXTREMELY DRY CONDITIONS. ONLY NORTHERN IDAHO BASINS ARE EXPECTED TO PRODUCE NEAR AVERAGE RUNOFF THIS YEAR. WATER USERS IN CENTRAL AND SOUTHERN IDAHO SHOULD BE PREPARED FOR CRITICALLY SHORT WATER SUPPLIES THIS SPRING AND SUMMER AND SHOULD KEEP IN TOUCH WITH THEIR LOCAL IRRIGATION DISTRICTS FOR MORE SPECIFIC INFORMATION.

SNOWPACK

Below normal snowfall across the entire state during February has decreased the snowpack percentages that were reported last month. Many snow courses in central and southern Idaho are reporting the second lowest snowpack on record, below the 1987 levels for March 1. Currently, snowpacks range from 80 to 100% of average in northern Idaho, 20 to 60% in central and southern Idaho, and 50 to 70% in eastern Idaho and the upper Snake River basin in western Wyoming. The Little Wood River basin reports the lowest snowpack in the state, with only 10% of average water content for March 1. Some low elevation snowpacks in central and southern Idaho were already beginning to melt by late February as a result of the above normal temperatures. A series of wet storms during the first four days of March nearly doubled the snowpack in the drought stricken Wood and Lost River basins. But with only a few more weeks of winter left, it will be virtually impossible to make up the snowpack deficit in most drainage basins of central and southern Idaho.

PRECIPITATION

The southern half of Idaho received below normal precipitation for the ninth straight month. Mountain precipitation during February ranged from 60 to 90% of normal in northern Idaho, 10 to 40% in the southern and central portions of the state, and around 50% of average in eastern Idaho and the upper Snake River basin in western Wyoming. Temperatures around the state during February were above normal, with many stations showing mean daily temperatures 5 to 15 degrees above average during the middle of the month. The National Weather Service's 30 day outlook for March calls for above average precipitation in the northern, central, and southwestern portions of the state, with near average amounts expected in the southeast. Temperatures are forecast to be above average, especially in the south.

RESERVOIRS

Reservoirs across Idaho continue to rise slowly as operators reduce outflows to a minimum in anticipation of low inflows during the runoff season. Reservoir storage is currently near average in northern Idaho, the Payette and upper Snake basins. Elsewhere, storages are below normal, ranging from only 22% of average in Magic Reservoir (12% of capacity) to 70% in Mackay (51% of capacity). The three major reservoirs on the Boise system report 74% of normal storage for March 1 (45% of capacity), and nine key reservoirs on the Snake system report 86% of average storage (60% of capacity). Current modeling results indicate that the Boise system will not fill and the Snake system may not fill. Some water shortages are expected, and water users should keep in touch with their local irrigation districts for more specific information.

STREAMFLOW

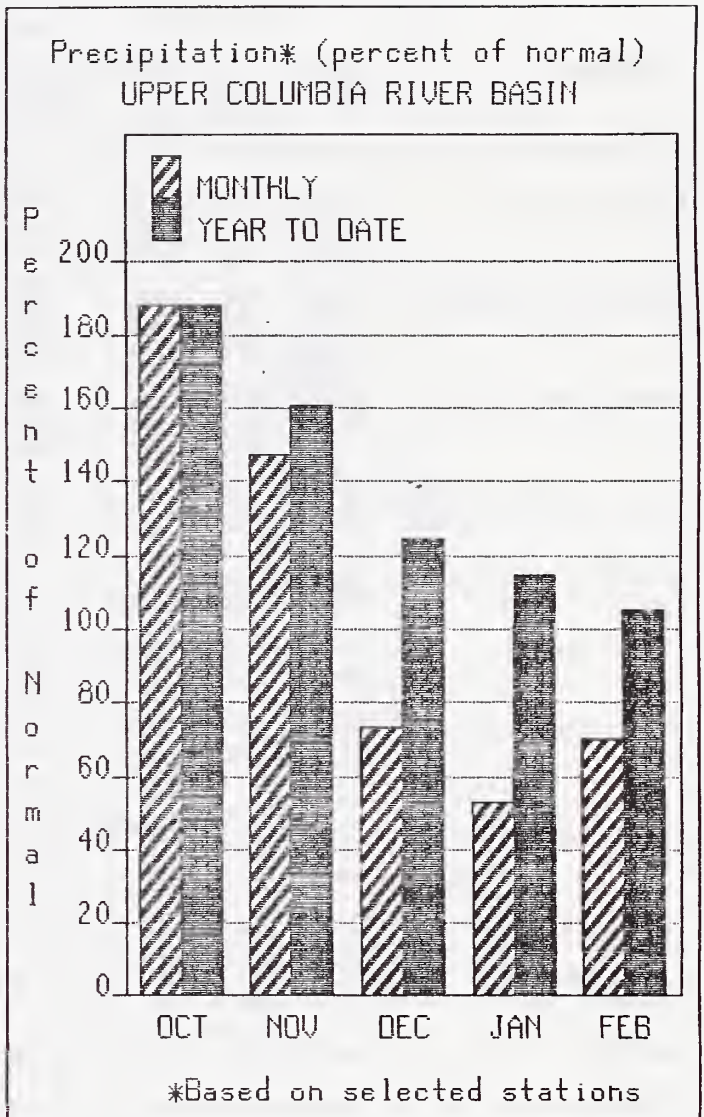
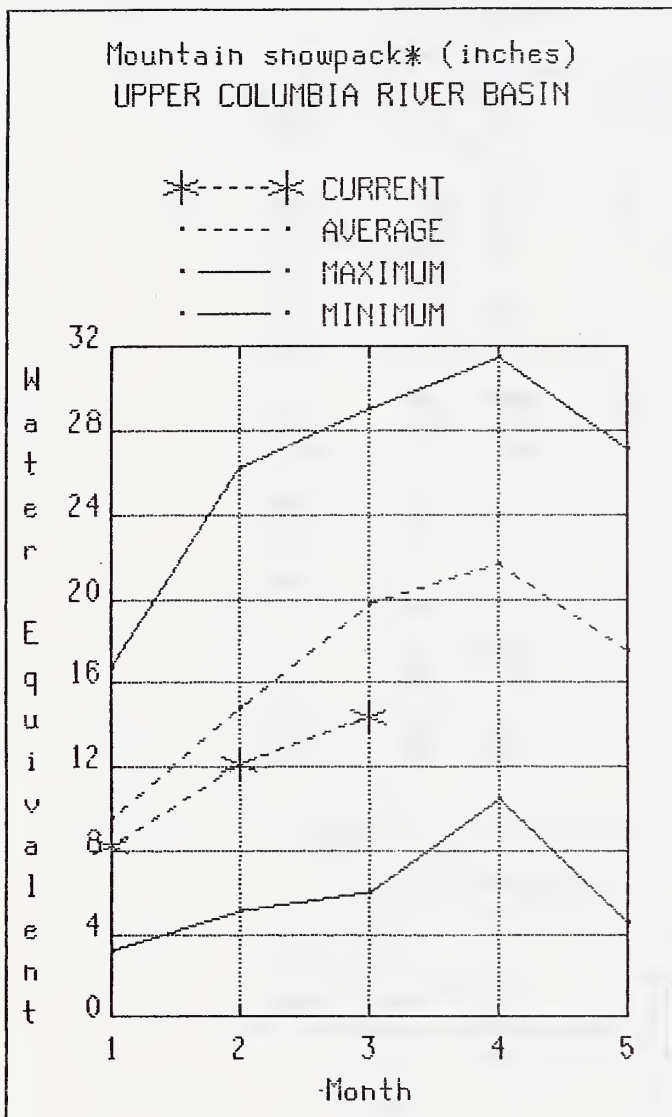
February streamflow was near normal in northern Idaho, slightly below normal in the upper Snake and Henry's Fork, and well below normal throughout central and southern Idaho. Forecasts for the coming runoff season vary widely around the state, reflecting the diverse snowpack situation. Well below normal snow accumulation in February, however, has decreased most runoff projections from those reported last month. Central Idaho watersheds are in the well below normal category and may face critically short water supplies by mid-summer. Forecasts for central Idaho range from 21% of average for the Magic Reservoir inflow to 56% for the Salmon River at White Bird. The upper Snake and southside Snake basins are forecast below average, ranging from 30% of normal for the Owyhee to 73% for Palisades Reservoir inflow. Northern Idaho streams are forecast to produce near normal seasonal volumes this year, ranging from 81% of average for the Clearwater at Spalding to 104% for the Priest River.

RECREATIONAL OUTLOOK

Below average snowfall during February has further reduced the outlook for high runoff across southern and central Idaho. Whitewater enthusiasts can still plan for high water and a long boating season on the Lochsa and Selway Rivers of northern Idaho, where snowpacks are in the 80% of average range. In the Salmon basin, boaters should plan on early access to the rivers, low peak flows, and an earlier than normal return to low flow conditions. This will be another year to enjoy the benefits of low water boating: warm and clear water, large beaches, and better fishing. The Payette River basin should provide excellent boating due to good reservoir storage. The desert rivers of southwest Idaho will have an early and short boating season.

Upper Columbia River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

Slightly below normal precipitation during February has reduced basin snowpack percentages somewhat from the values reported last month. Currently, snowpacks range from 81% of average in the Clark Fork basin to 125% in the Moyie River basin. Streamflow forecasts are still calling for near average flows, ranging from 90% of normal for the Spokane River near Post Falls to 121% for the Kootenai. Reservoir storages are near normal for March 1 in Pend Oreille, Coeur d'Alene, and Priest Lakes. All these factors indicate that water supplies should be adequate for most users in the Idaho Panhandle for the 1991 season.

UPPER COLUMBIA RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS							25 YR. (1000AF)
		CHANCE OF EXCEEDING *							
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
KOOTENAI at Leonia (1,2)	APR-SEP	8530	9660	10200	121	10700	12000	8441	
	APR-JUL	7410	8400	8870	121	9340	10400	7340	
	APR-JUN	5960	6760	7140	121	7520	8380	5899	
CLARK FK at Whitehorse Rpds (1,2)	APR-SEP	9850	12000	13000	97	14000	16200	13370	
	APR-JUL	8940	10900	11800	97	12700	14700	12150	
	APR-JUN	7670	9240	10000	97	10800	12500	10360	
PEND OREILLE LAKE inflow (1,2)	APR-SEP	11600	13800	14900	100	16000	18300	14930	
	APR-JUL	10600	12600	13600	100	14600	16800	13650	
	APR-JUN	9190	10900	11800	100	12700	14500	11780	
PRIEST nr Priest River (1,2)	APR-SEP	700	860	930	104	1000	1160	893	
	APR-JUL	655	800	870	104	940	1090	838	
COEUR D'ALENE at Enaville (1)	APR-SEP	365	630	750	90	870	1140	830	
	APR-JUL	350	600	715	91	830	1080	789	
ST. JOE at Calder	APR-SEP	885	1060	1180	92	1300	1490	1281	
	APR-JUL	835	995	1110	92	1230	1400	1211	
SPOKANE nr Post Falls (1,2)	APR-SEP	1610	2120	2540	90	2960	3470	2820	
	APR-JUL	1550	2050	2450	90	2850	3350	2723	

RESERVOIR STORAGE					WATERSHED SNOWPACK ANALYSIS				
RESERVOIR	USEABLE :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF		
	CAPACITY:	THIS	LAST	AVG.			LAST YR.	AVERAGE	
	:	YEAR	YEAR						
HUNGRY HORSE	3451.0	2092.0	2456.0	2257.0	Kootenai ab Bonners Ferry	52	102	112	
FLATHEAD LAKE	1791.0	932.7	792.2	901.0	Moyie River	3	120	125	
PEND OREILLE	1561.2	682.4	609.3	831.8	Pend Oreille River	131	98	94	
NOXON RAPIDS	335.0	306.7	274.0	297.6	Clark Fork River	95	90	81	
COEUR D'ALENE	291.2	303.2	172.2	220.9	Priest River	4	80	83	
PRIEST LAKE	97.7	31.0	21.0	34.4	Rathdrum Creek	2	41	48	
					Hayden Lake	3	28	37	
					Coeur d'Alene River	10	73	79	
					St. Joe River	8	92	93	
					Spokane River	21	79	83	
					Palouse River	1	63	52	

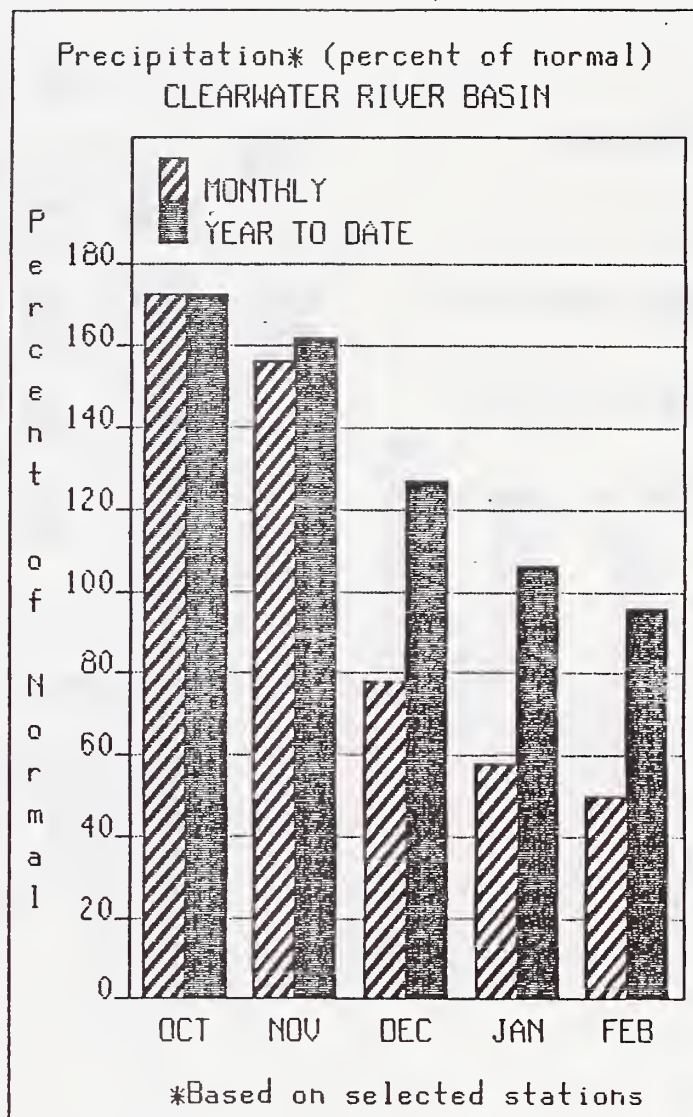
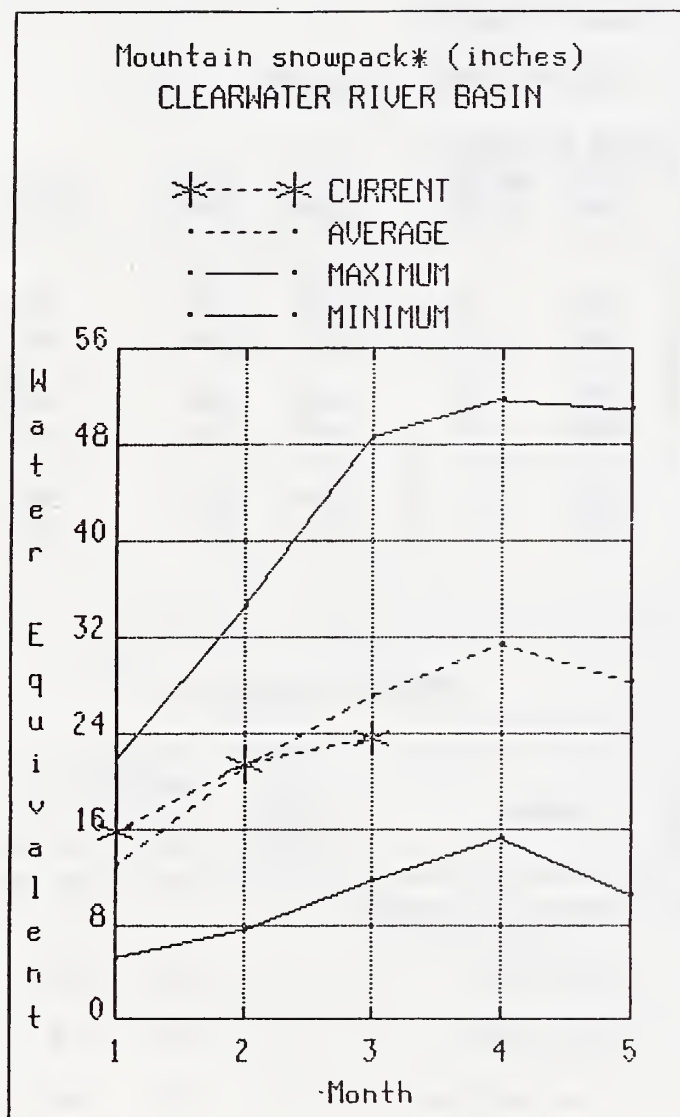
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Clearwater River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

Mountain SNOTEL stations reported only 59% of normal precipitation during February in the Clearwater basin. Consequently, basin snowpack percentages have decreased somewhat from the values reported last month. Snowpacks currently range from 79% of average on the Selway basin to 93% on the North Fork Clearwater. Streamflow forecasts have also been reduced slightly, and are currently in the 81 to 85% of average range. Reservoir storage is excellent in Dworshak with 115% of normal storage for March 1 (69% of capacity). All indicators point to an adequate water supply for most users in the Clearwater River basin for 1991.

CLEARWATER RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----></div> </div>						
		CHANCE OF EXCEEDING *						25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
DWORSHAK RESERVOIR inflow (1)	APR-SEP	1540	2220	2530	84	2840	3520	3010
	APR-JUL	1470	2100	2390	85	2680	3300	2822
CLEARWATER at Orofino (1)	APR-SEP	2570	3700	4210	82	4720	5850	5163
	APR-JUL	2420	3490	3980	81	4470	5540	4889
CLEARWATER at Spalding (1,2)	APR-SEP	4230	5980	6770	81	7560	9310	8378
	APR-JUL	3990	5640	6390	81	7140	8790	7916

RESERVOIR STORAGE (1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
DWORSHAK	3467.8	2386.9	2409.0	2084.1	North Fork Clearwater	12	95	93
					Lochsa River	5	90	82
					Selway River	6	85	79
					Clearwater River	20	92	88

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

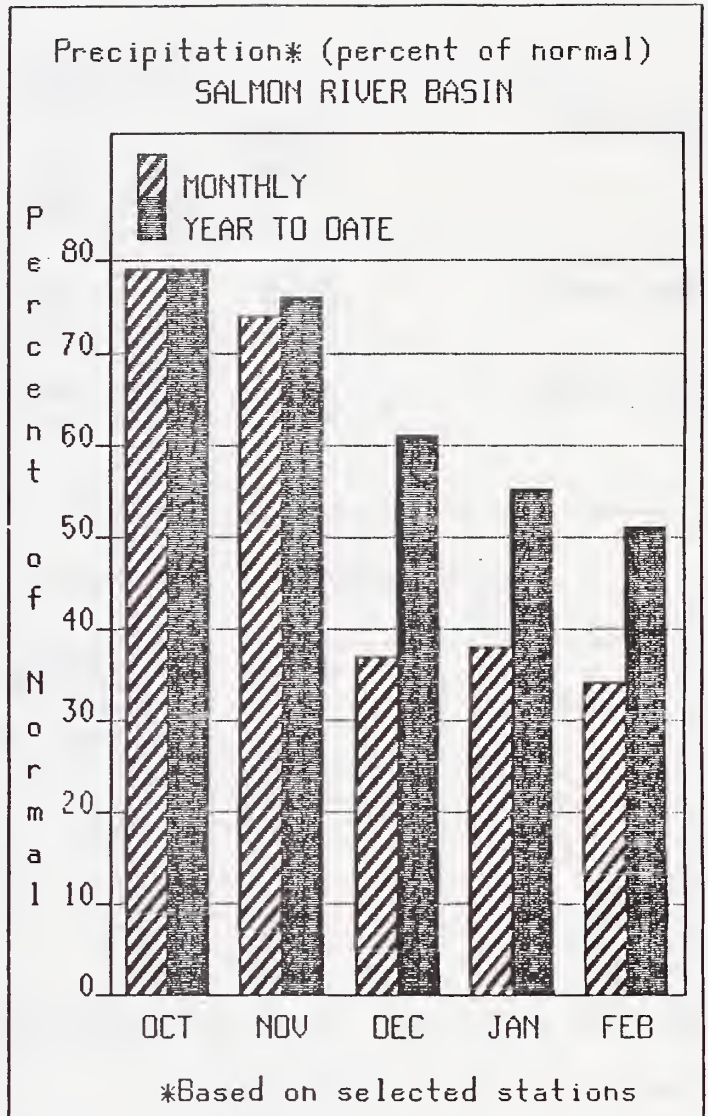
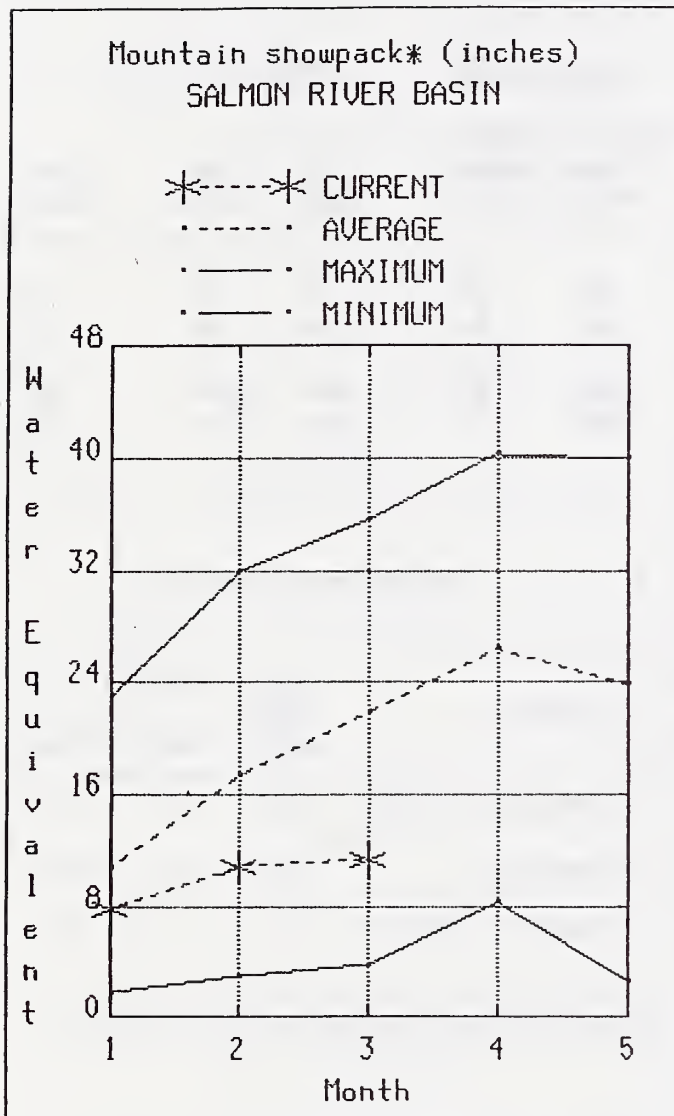
The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Salmon River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

Another very dry month has dropped March 1 snowpack levels in the Salmon River basin to the second lowest on record, even lower than the 1987 drought year. Currently, the Salmon River basin reports a snowpack of only 56% of average. As a result, streamflow forecasts have been even further reduced: the Salmon River at Salmon is expected to produce only 55% of its normal flow for the Apr-Sept period. Water users in the Salmon basin should be prepared for early runoff, an early recession to low flow conditions, and possibly short water supplies, especially late in the season.

SALMON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						
		CHANCE OF EXCEEDING *						
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	25 YR. (1000AF)
SALMON at Salmon (1)	APR-SEP	190	465	590	55	715	990	1077
	APR-JUL	164	400	505	55	610	845	919
SALMON at White Bird (1)	APR-SEP	1980	3320	3930	56	4540	5880	7007
	APR-JUL	1790	3000	3550	56	4100	5310	6322

RESERVOIR STORAGE (1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE : ** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
	CAPACITY:	THIS	LAST			LAST YR.	AVERAGE
	: YEAR	YEAR	AVG.				
				Salmon River ab Salmon	9	70	47
				Lemhi River	12	86	66
				Salmon River Total	32	77	56

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

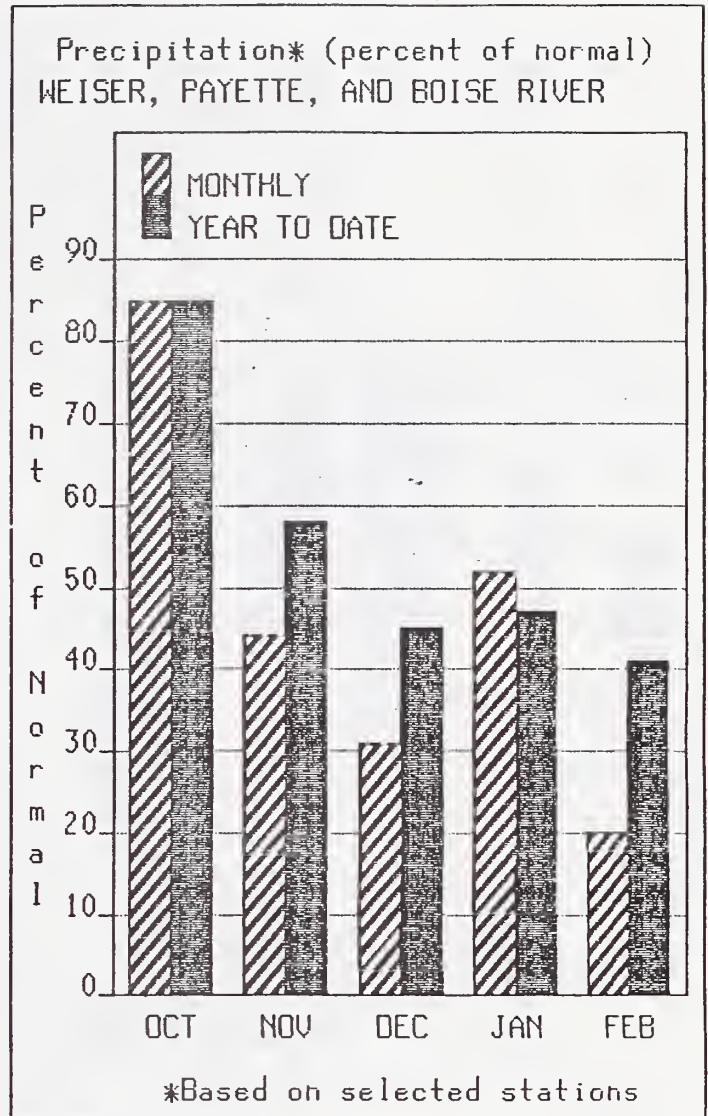
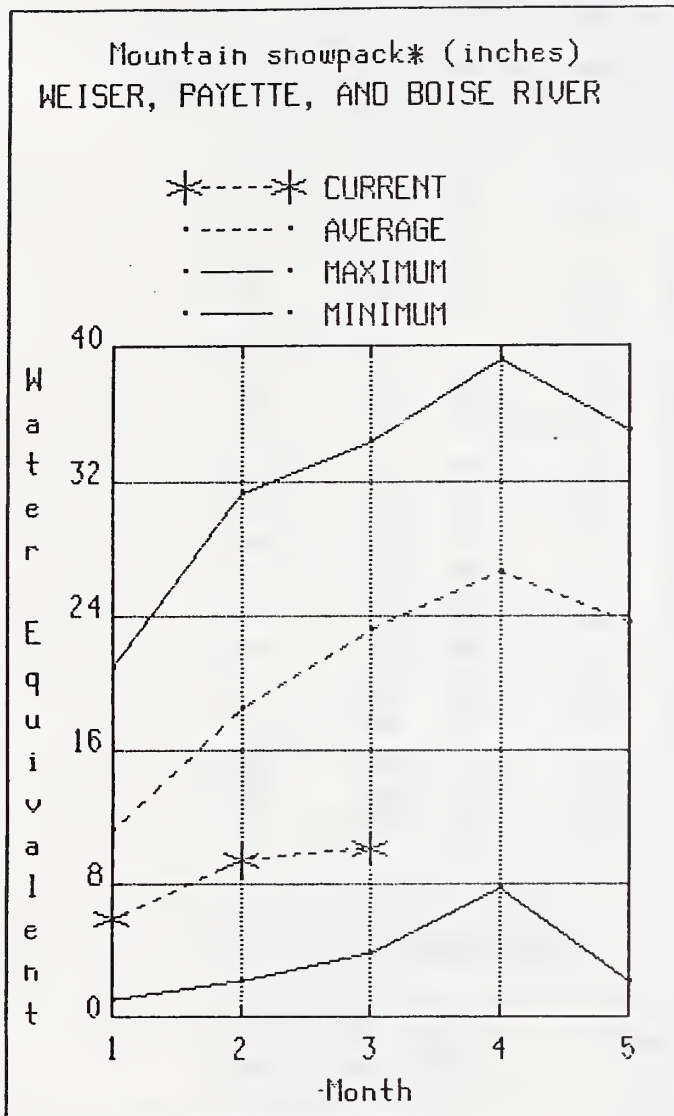
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Weiser, Payette, and Boise River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

Another disappointing snowfall month has left the west central mountains with the second lowest snowpack on record for March 1. With only one-third of normal precipitation for the month of February, snowpack levels have dropped to less than half of normal for this time of year. On the bright side, the Payette basin reports 112% of normal reservoir storage for March 1 (62% of capacity). The Boise system reports considerably less, with the three major reservoirs reporting 74% of average for March 1 (45% of capacity). The Boise system is not expected to fill, and some water shortages may result. A series of wet storms during the first four days of March dropped as much as seven inches of moisture in the higher elevations of the Boise River basin, which should improve next month's outlook. All water users should keep in touch with their local irrigation districts for more specific information.

WEISER, PAYETTE, AND BOISE RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		<----- DRIER ----->		FUTURE CONDITIONS		----- WETTER ----->		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	CHANCE OF EXCEEDING * (% AVG.)	30% (1000AF)	10% (1000AF)	
WEISER nr Weiser (1)	APR-SEP	36	111	154	35	225	380	444
	APR-JUL	33	104	144	35	210	355	414
SF PAYETTE at Lowman	APR-SEP	143	189	220	43	250	295	512
	APR-JUL	117	158	186	41	215	255	454
DEADWOOD RESERVOIR inflow (1)	APR-JUL	31	53	63	44	73	94	143
NF PAYETTE at Cascade (1,2)	APR-SEP	108	198	240	42	280	375	568
	APR-JUL	99	186	225	42	265	350	531
NF PAYETTE nr Banks (2)	APR-SEP	120	225	295	40	365	470	737
	APR-JUL	111	210	275	40	340	440	691
PAYETTE nr Horseshoe Bend (1,2)	APR-SEP	260	590	745	40	900	1230	1862
	APR-JUL	240	545	690	40	835	1130	1717
BOISE nr Twin Springs (1)	APR-SEP	215	305	345	48	385	475	722
	APR-JUL	185	270	310	47	350	435	664
SF BOISE at Anderson Rnch Dm (1,2)	APR-SEP	68	137	186	30	235	340	619
	APR-JUL	64	128	173	30	220	320	578
BOISE nr Boise (1,2)	APR-SEP	245	495	610	37	725	975	1628
	APR-JUL	198	435	540	36	645	880	1508
	APR-JUN	240	410	490	37	570	740	1334

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF
	: YEAR	THIS YEAR	LAST YEAR	AVG.			LAST YR. AVERAGE
MANN CREEK	11.3	3.5	4.1	6.8	Mann Creek	2	64 37
CASCADE	703.2	451.8	478.1	393.8	Weiser River	6	60 43
DEADWOOD	162.0	85.8	90.5	84.5	North Fork Payette	8	70 48
ANDERSON RANCH	464.2	172.7	257.9	282.1	South Fork Payette	7	63 44
ARROWROCK	286.6	237.0	137.8	234.8	Payette River Total	15	67 46
LUCKY PEAK	307.0	63.0	111.0	122.5	Middle & North Fork Boise	7	67 46
LAKE LOWELL (DEER FLAT)	177.0	66.4	105.7	140.6	South Fork Boise River	9	52 33
					Boise River Total	18	58 40
					Canyon Creek	2	0 0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

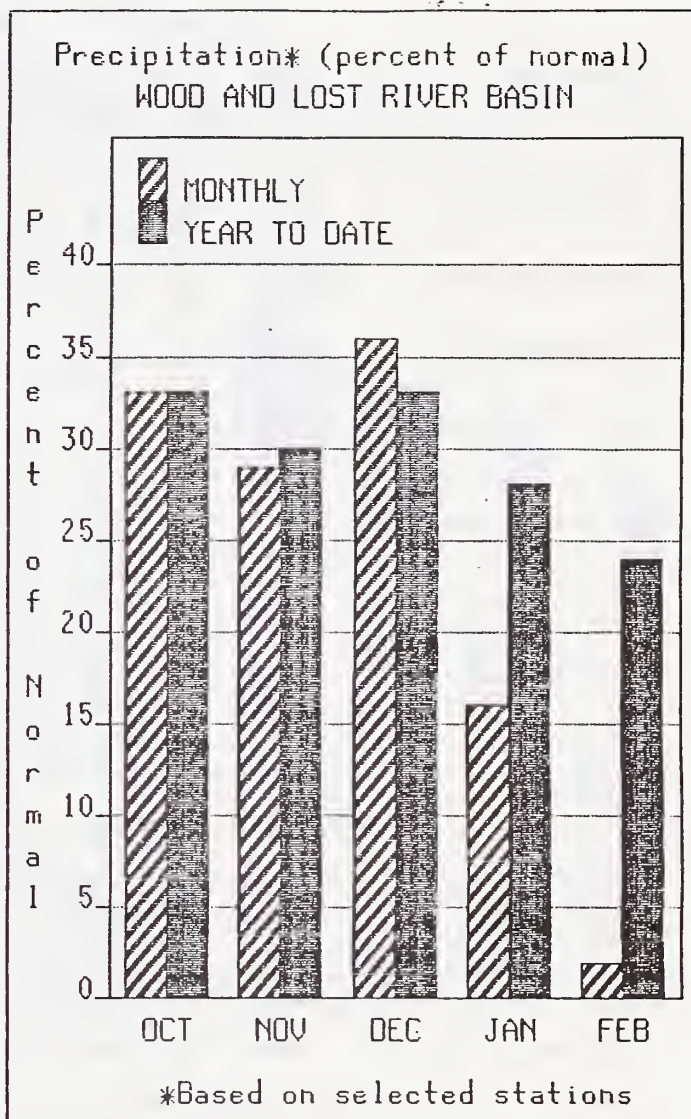
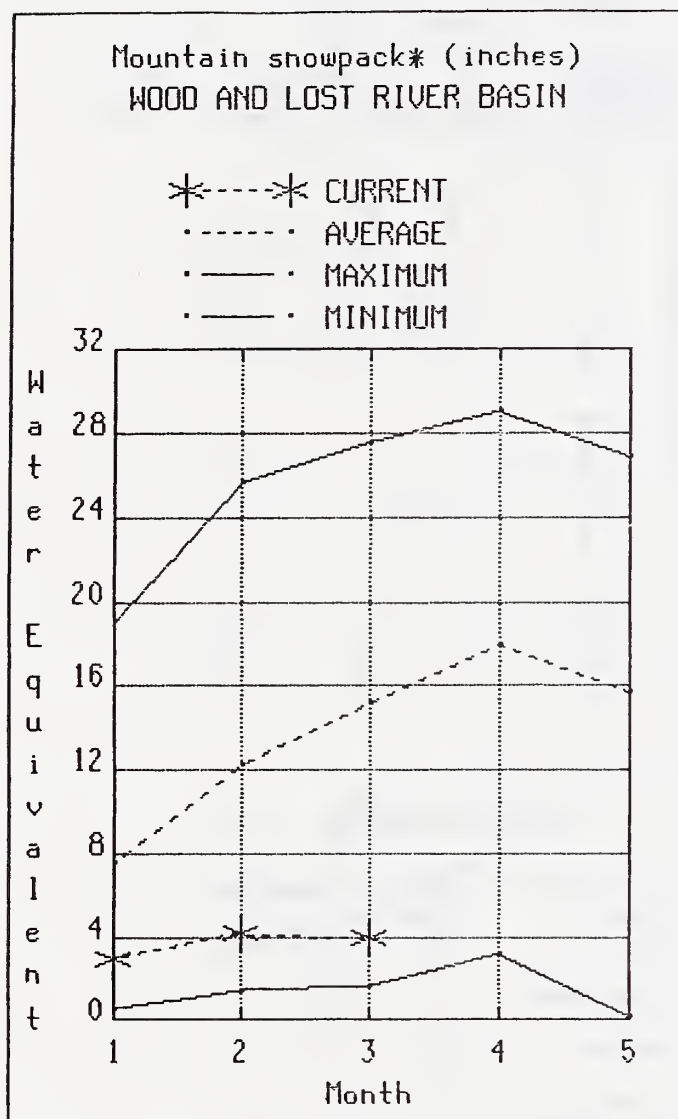
The average is computed for the 1961-1985 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Big Wood, Little Wood, Big Lost, and Little Lost River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

The drought-ravaged east central mountains continue to show well below normal snowpacks for yet another year. Currently, snowpacks range from only 10% of normal in the Little Wood basin to 32% for the Big Wood River above Magic Reservoir. All watersheds are reporting the second lowest snowpack on record, with the Little Wood basin actually setting the all time record low. Reservoir storage is very low as well, with Magic Reservoir reporting only 22% of average storage (12% of capacity). Streamflow forecasts are extremely low, and range from only 21% of average for the Big Wood below Magic reservoir to 56% for the Little Lost. On the bright side, a series of heavy storms during the first four days of March essentially doubled the snowpack in the Wood and Lost River basins. Nonetheless, water users should be prepared for CRITICALLY SHORT WATER SUPPLIES this spring and summer and should keep in touch with their local irrigation districts for more specific information.

BIG WOOD, LITTLE WOOD, BIG LOST, AND LITTLE LOST RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		<----- DRIER -----		FUTURE CONDITIONS		----- WETTER ----->		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	CHANCE OF EXCEEDING * (% AVG.)	30% (1000AF)	10% (1000AF)	
BIG WOOD nr Bellevue	APR-SEP	13.0	32	54	25	85	131	214
	APR-JUL	12.0	30	50	25	79	122	198
BIG WOOD bl Magic Dam (2)	APR-SEP	37	54	72	21	120	190	338
	APR-JUL	35	52	68	21	113	180	322
LITTLE WOOD nr Carey	APR-SEP	5.0	14.0	27	25	40	57	107
	APR-JUL	5.0	13.0	25	25	37	52	99
BIG LOST at Howell Ranch nr Chilly	APR-SEP	54	81	100	46	119	146	219
	APR-JUL	46	71	88	46	105	130	192
	APR-JUN	37	55	68	46	81	99	148
BIG LOST bl Mackay Reservoir (2)	APR-SEP	34	64	84	43	104	134	195
	APR-JUL	26	52	70	43	88	115	162
LITTLE LOST bl Wet Ck	APR-SEP	11.0	18.0	22	55	26	33	40
	APR-JUL	9.5	14.3	17.6	55	21	26	32
LITTLE LOST nr Howe	APR-SEP	17.0	22	25	57	28	33	44
	APR-JUL	13.4	16.8	19.1	58	21	25	33

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
MAGIC	191.5	22.5	25.4	102.4	Big Wood ab Magic	10	54 34
LITTLE WOOD	30.0	11.6	15.8	17.6	Camas Creek	5	27 16
CAREY VALLEY	NO REPORT				Big Wood Total	15	48 30
MACKAY	44.5	22.8	24.2	32.6	Little Wood River	3	18 10
					Fish Creek	3	22 11
					Big Lost River	8	32 18
					Little Lost River	4	50 32

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

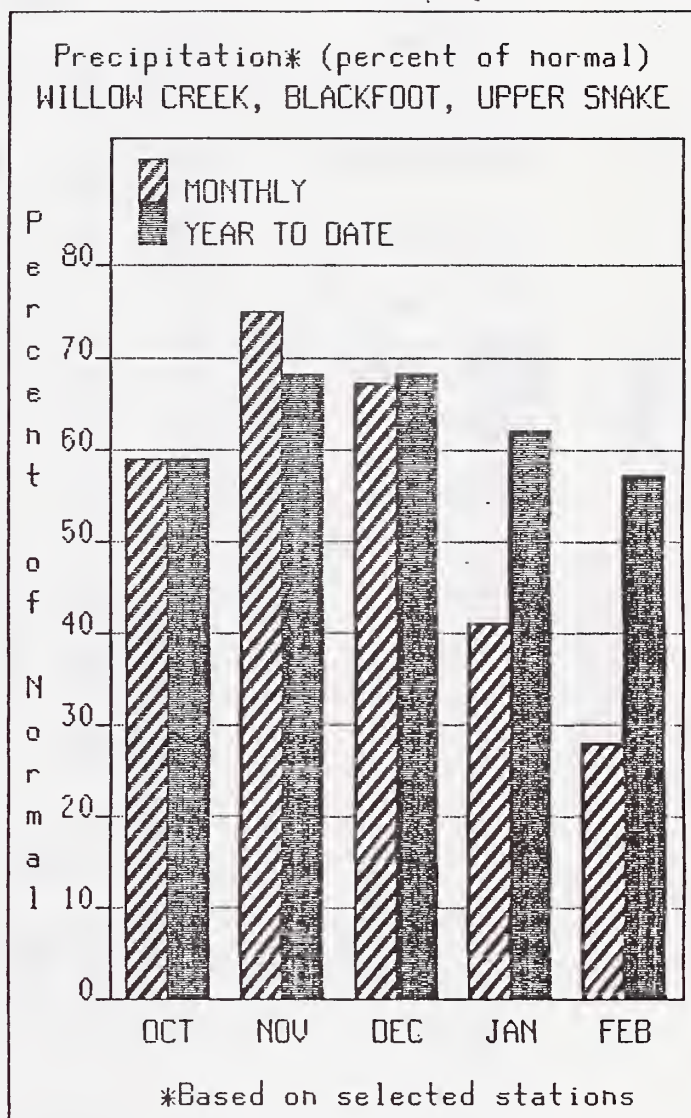
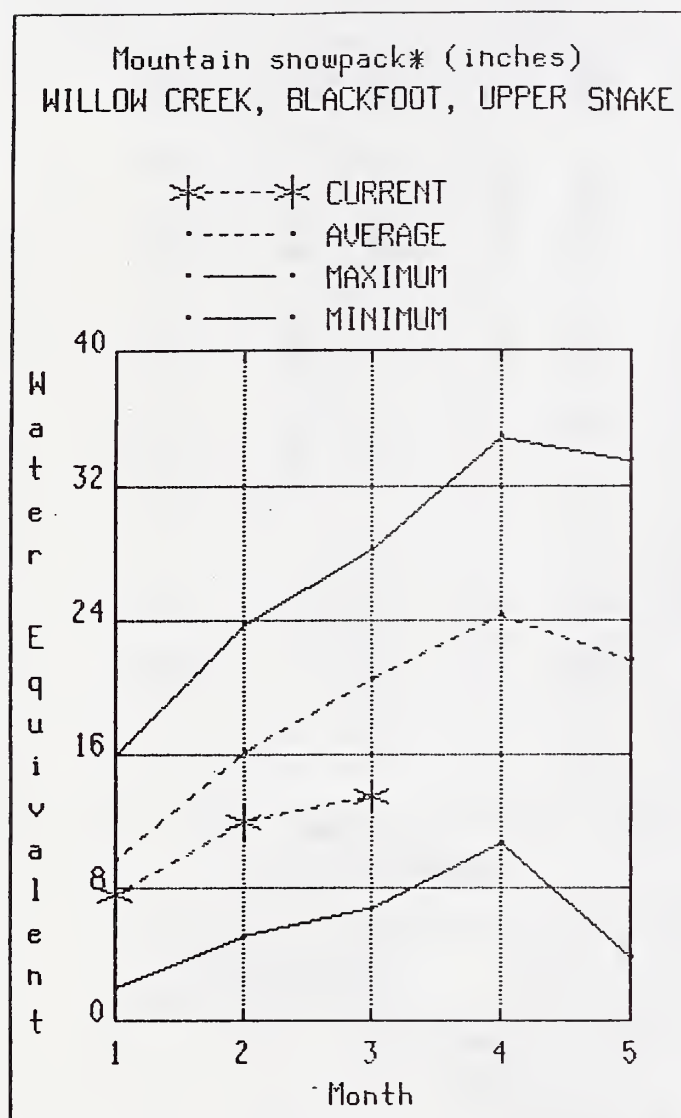
The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Willow Creek, Blackfoot, Upper Snake, and Portneuf River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

Eastern Idaho received only about half of normal snowfall during February, and as a result, snowpack percentages have declined from the figures reported last month. Currently, snowpacks range from 61% of normal on the Henrys Fork drainage to 76% on the Gros Ventre River in western Wyoming. Streamflow forecasts have been reduced as well, and currently range from 57% of average for the Henrys Fork near Rexburg to 75% for the Snake near Moran. Reservoir storage is slightly below normal, with nine reservoirs in the Snake system reporting 86% of average storage (60% of capacity). The Snake system may not achieve total refill. Water users should be prepared for possible water shortages, and should keep in touch with their local irrigation districts for more specific information.

WILLOW CREEK, BLACKFOOT, UPPER SNAKE, AND PORTNEUF RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						25 YR. (1000AF)
		<----- DRIER ----->		CHANCE OF EXCEEDING *		>----- WETTER ----->		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK nr Ashton (2)	APR-SEP	410	435	485	65	515	560	746
	APR-JUL	305	340	360	65	380	415	557
HENRYS FORK nr Rexburg (2)	APR-SEP	620	805	920	58	1040	1210	1595
	APR-JUL	495	630	720	57	810	960	1260
FALLS nr Squirrel (1,2)	APR-JUL	191	240	260	70	280	330	373
TETON ab S Leigh Ck nr Driggs	APR-SEP	113	129	140	72	151	167	194
	APR-JUL	83	95	103	71	111	123	145
TETON nr St. Anthony	APR-SEP	265	310	335	70	360	400	479
	APR-JUL	215	250	270	70	290	325	387
SNAKE nr Moran (1,2)	APR-SEP	500	615	670	75	725	840	888
PALISADES RESERVOIR inflow (1,2)	APR-SEP	1930	2540	2820	73	3100	3700	3852
SNAKE nr Heise (2)	APR-SEP	2070	2630	3030	73	3430	3980	4142
	APR-JUL	1760	2220	2560	73	2900	3400	3524
SNAKE nr Blackfoot (1,2)	APR-SEP	2610	3290	3690	65	4090	4770	5680
	APR-JUL	2110	2660	2970	65	3300	3850	4589
PORTNEUF at Topaz	MAR-SEP	50	64	73	67	83	96	109
	MAR-JUL	39	50	58	66	66	77	88

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
ISLAND PARK	127.6	89.9	117.5	110.1	Cass-Beaver Creeks	5	73	42
GRASSY LAKE	15.2	13.2	12.7	10.9	Henrys Fork River	13	71	61
JACKSON LAKE	824.7	546.4	570.6	535.9	Teton River	9	89	70
PALISADES	1357.0	464.0	1066.1	1028.0	Snake above Palisades	31	79	64
AMERICAN FALLS	1700.0	1213.5	1277.3	1277.2	Snake above Jackson Lake	9	78	64
BROWNLEE	975.3	775.9	656.8	531.0	Gros Ventre River	3	83	76
BLACKFOOT	348.7	92.5	161.5	242.1	Hoback River	5	85	65
HENRYS LAKE	90.4	82.2	87.6	79.4	Greys River	5	76	57
RIRIE	96.5	46.6	49.8	51.3	Salt River	7	87	65
					Willow Creek	8	106	71
					Blackfoot River	9	90	62
					Portneuf River	12	106	68
					Toponce Creek	3	112	67

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

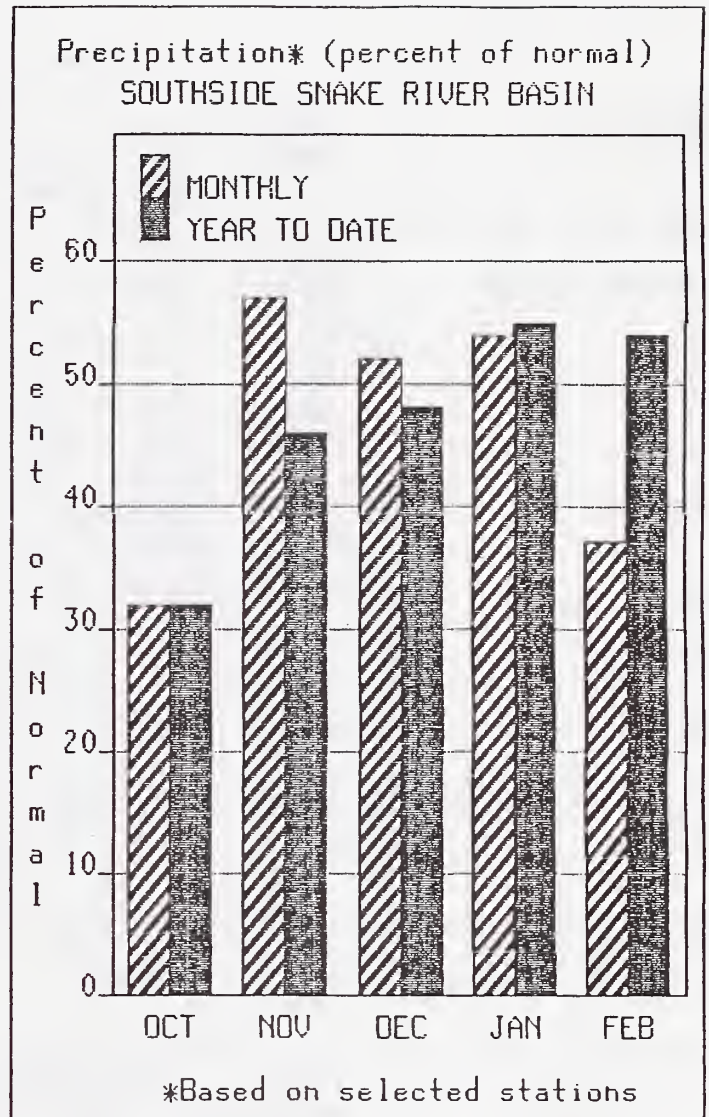
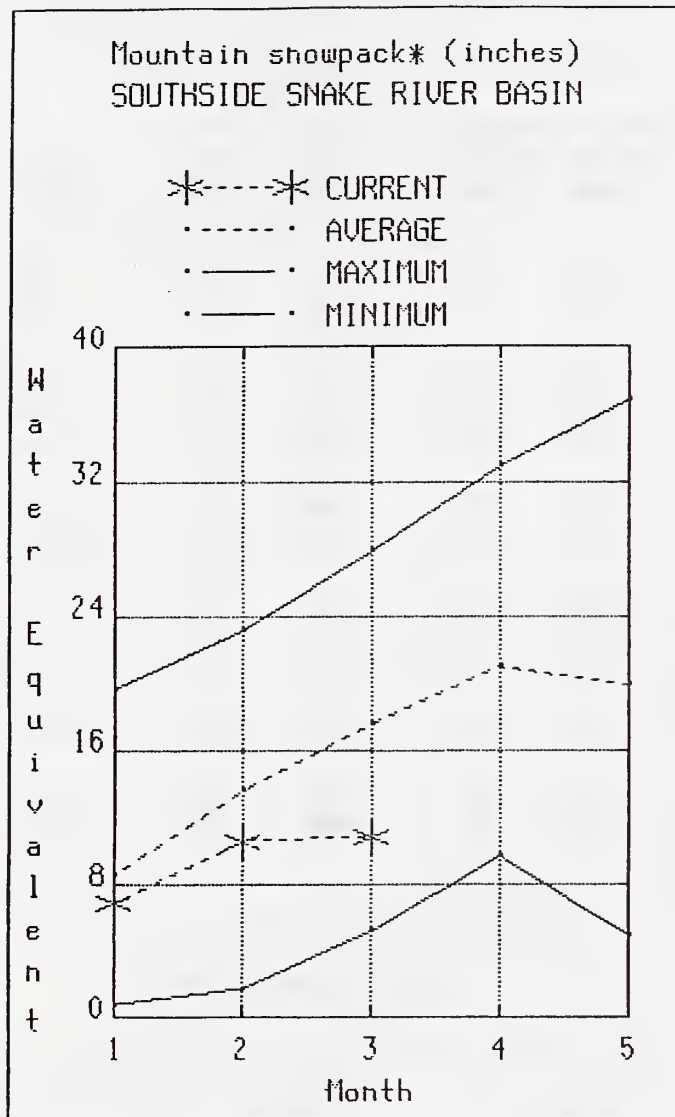
The average is computed for the 1961-1985 base period.

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Southside Snake River Basin

March 1, 1991



WATER SUPPLY OUTLOOK

The southern edge of Idaho received only about half of normal snowfall during February, and as a result, snowpack percentages have declined somewhat from the values reported last month. Most watersheds are currently reporting snowpacks in the 60% of average range, very similar to the conditions in 1987. As a result, streamflow forecasts have been reduced from last month, and range from 30% of average for the Owyhee near Rome to 52% for the Bruneau. Reservoir storage is well below average in Oakley, Salmon Falls, and Owyhee Reservoirs. Water users should be prepared for critically short water supplies and should stay in touch with their local irrigation districts for more specific information.

SOUTHSIDE SNAKE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div style="display: flex; justify-content: space-between; align-items: center;"> <----- DRIER ----- FUTURE CONDITIONS ----- WETTER -----> </div>						
		CHANCE OF EXCEEDING *						25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
OAKLEY RESERVOIR inflow	MAR-SEP	3.8	11.1	16.5	43	22	30	38
	MAR-JUL	3.5	9.9	15.0	43	20	28	35
SALMON FALLS CK nr San Jacinto	MAR-SEP	10.0	33	49	48	65	88	102
	MAR-JUL	10.0	32	47	48	62	84	97
	MAR-JUN	11.0	31	44	48	57	77	91
BRUNEAU nr Hot Spring	MAR-SEP	56	103	134	52	166	210	260
	MAR-JUL	54	97	127	51	157	200	248
OWYHEE nr Gold Ck (2)	MAR-JUL	2.6	9.6	15.8	48	22	31	33
OWYHEE nr Owyhee (2)	APR-JUL	4.0	29	45	52	62	86	86
OWYHEE nr Rome	MAR-JUL	46	114	170	30	280	435	569
OWYHEE RESERVOIR inflow (1,2)	APR-SEP	45	113	145	32	260	515	452
	MAR-JUL	59	147	188	32	305	565	588

RESERVOIR STORAGE

(1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
OAKLEY	77.4	10.8	13.4	29.9	Raft River	7	104	63
SALMON FALLS	182.6	18.0	27.8	53.9	Goose-Trapper Creeks	4	98	63
OWYHEE	715.0	251.0	439.9	512.0	Salmon Falls Creek	9	77	62
					Bruneau River	10	62	56
					Owyhee River	21	53	47

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

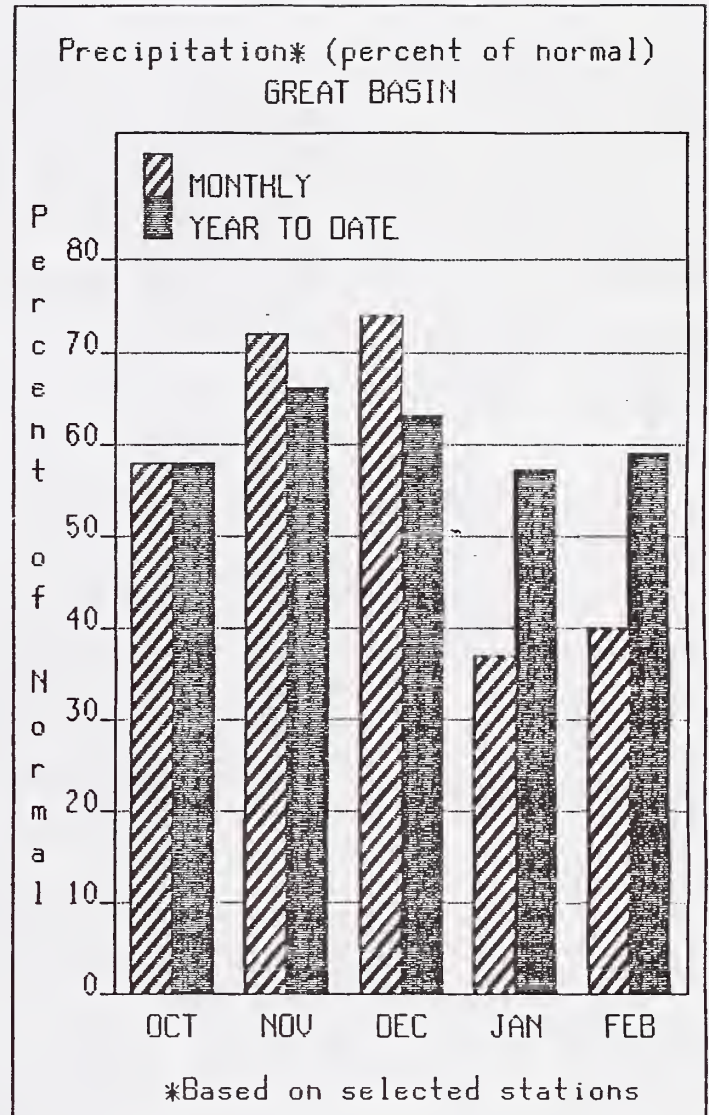
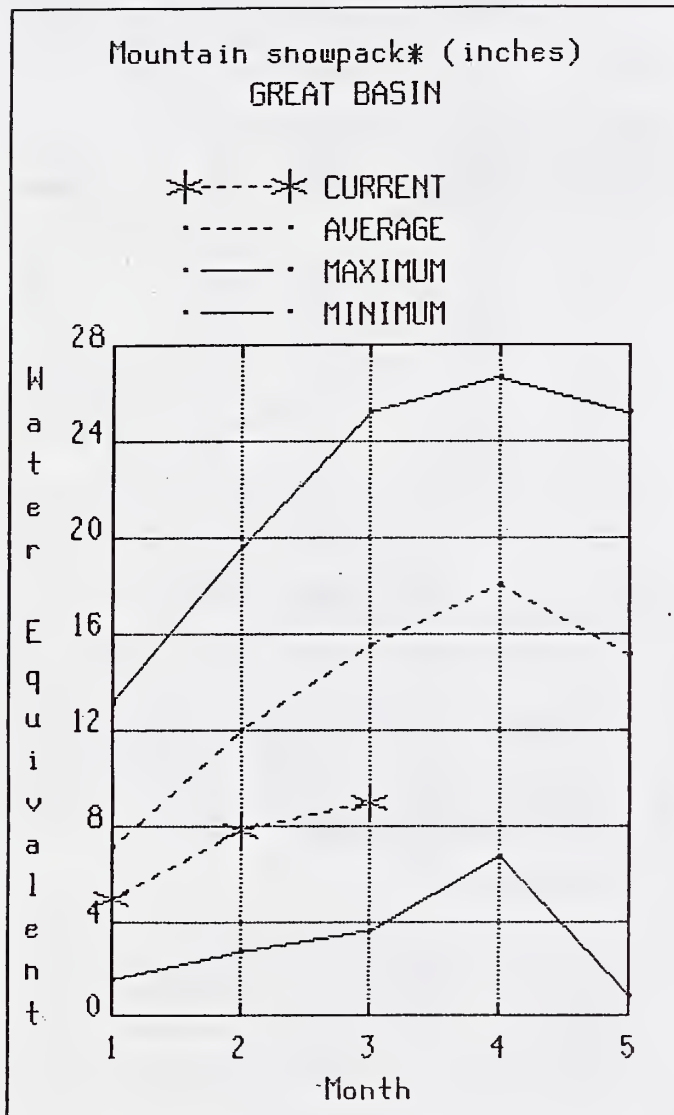
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Great Basin

March 1, 1991



WATER SUPPLY OUTLOOK

With only about half of normal snowfall during February, snowpacks in the Great Basin have declined from the figures reported last month and currently range from 41% of normal on the Malad River to 69% on Mink Creek. Streamflow forecasts have been reduced as a result and currently range from 55% of normal for the Bear River to 61% for Montpelier Creek. Reservoir storage is very low in both Bear Lake (51% of average, 35% of capacity) and Montpelier Creek Reservoir (35% of average, 15% of capacity). Water users should be prepared for critically short water supplies this summer and should stay in touch with their local irrigation districts for more specific information.

GREAT BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div> <div><----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----></div> </div>						
		CHANCE OF EXCEEDING *						
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	25 YR. (1000AF)
BEAR nr Harer	APR-SEP	19.0	96	170	55	245	355	310
MONTPELIER CK nr Montpelier	APR-SEP	1.6	5.7	8.5	61	11.3	15.4	13.9
CUB nr Preston	APR-SEP			31	60			52
	APR-JUL	10.0	21	28	60	35	46	47

RESERVOIR STORAGE

(1000AF)

WATERSHED SNOWPACK ANALYSIS

RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
BEAR LAKE	1421.0	503.9	739.3	992.5	Bear River (above Harer)	12	80	59
MONTPELIER CREEK	4.0	0.6	0.5	1.7	Montpelier Creek	6	85	57
					Mink Creek	6	113	69
					Cub River	4	93	62
					Malad River	7	68	41

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Basin Outlook Reports

and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

**USDA, Soil Conservation Service
Snow Survey Data Collection Office
3244 Elder Street, Room 124
Boise, Idaho 83705
(208) 334-1614 FTS 554-1614**

How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

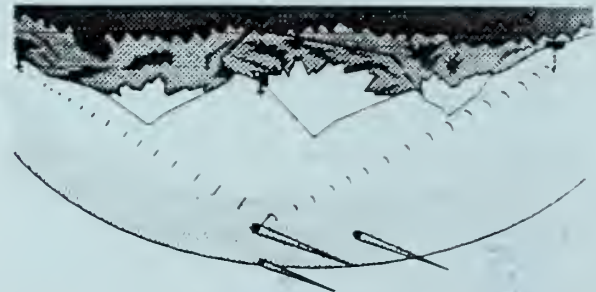
Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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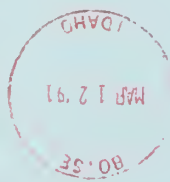
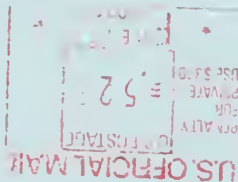
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Basin Outlook Reports



In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

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